Hughes (C. H.)

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A

CLINICAL INQUIRY

INTO THE

DIAGNOSTIC SIGNIFICANCE

OF

Absent Patellar Tendon Reflex.

By C. H. HUGHES, M. D.

Art. III—*A Clinical Inquiry into the Diagnostic Significance of Absent Patellar Tendon Reflex.

By C. H. Hughes, M. D.,

LATE SUPERINTENDENT AND PHYSICIAN OF THE MISSOURI STATE LUNATIC ASYLUM AT FULTON; CONSULTING PHYSICIAN TO THE MISERICORDIA ASYLUM FOR THE INSANE AND NERVOUS, AND TO THE FEMALE HOSPITAL, SAINT LOUIS.

IF you sharply strike, with some hard substance, the naked skin just below the patella, whether anæsthetized or not, so as to affect the *quadriceps extensor femoris tendon*, between the knee cap and its point of insertion into the upper end of the tibia, while the person's leg hangs loosely, either from a table, from across the leg of the operator, or from across his own opposite knee, a prompt, marked and involuntary upward jerk will be the usual response. Westphal, Erb and others say the *invariable response*. So invariable do they and others regard it, that when it cannot be elicited on percussion,

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they claim for this fact a distinctive diagnostic significance. It is never present, they say, in progressive locomotor ataxia or posterior spinal *sclerosis.*

In Europe the majority of observers have ranged themselves with Westphal, who, more restrictive than Erb, makes it the diagnostic *sign, par excellence,* of locomotor ataxia.

Only Gowers, in England, and in this country, McLane, Hamilton, Bannister, Jewell, Landon Carter Gray, Beard and myself, have ventured to question the infallibility of this so-called *pathognomionic* sign; and I believe they constitute the majority of American physicians who have written upon the subject. At least, I know of only one other—Dr. E. C. Seguin.

That the absence of petellar tendon reflex is not incompatable with every semblance of perfect health, may be established to the satisfaction of any one who will, by percussion, diligently examine the petellar tendons of any considerable number of healthy persons, in the manner prescribed by Westphal, when searching for his indubitable (?) sign of *locomotor ataxia;* and its demonstrable and admitted absence, occasionally in perfectly healthy persons, must greatly militate against the sign being received as certainly and unexceptionally diagnostic. That Westphal must recede from the uncompromising stand he has taken, seems certain, in view, not only of the fact that it is sometimes physiologically absent (more often, perhaps, than we think, though, precisely in what proportion of cases, no one has yet definitely determined), but in the face of accumulating antagonistic clinical evidence on this side of the Atlantic, at least.

It is not our present purpose to discuss this question *in extenso.* Any person sufficiently interested in the subject to pursue it further, will find an accumulated literature in Europe and in this country, since the subject was first brought to the attention of the profession, sufficiently vast to satisfy the most diligent student of neurological problems.

In this country McLane, Hamilton, Boston Medical and Surgical Journal, Dec. 19th, 1878, Bannister, Journal of Mental and Nervous Diseases, *ibid* Oct. 1878, and Landon Carter Gray, have made it plain that the sign loses much of its asserted pathological value.

Dr. Gray, in his April, 1879, paper, repeats in substance and more at length, many of the points made against this sign by ourself in the previous February number of the St. Louis Medical and Surgical Journal.

We now offer for your consideration a

BRIEF HISTORY OF SOME CASES IN WHICH WESTPHAL'S TENDON REFLEX PHENOMENON WAS EITHER ABSENT OR EXAGGERATED.

CASE I.—Dr. W———, married, aged 53 years, on U. S. A. pension list, in consequence of sunstroke, hernia and tibial periostitis—the latter resulting from an injury; no history of syphilis admitted or demonstrable; "was overcome by heat and taken from his horse in a state of syncope, June 5th, 1863."

Diameter of pupils not materially greater or less in either light or darkness than No. 1 of Hutchinson's pupilometer, i. e., than two-thirds of a line.

Two opthalmologists found substantially as follows: "Pupils habitually contracted and scarcely dilating in a dark room. Symptoms of night blindness in accordance with the myosis Color perception bad for both red and green, but no impairment of visual acuteness in either eye. (Vision measures, 12-16). Retinal vessels and general appearance of fundus substantially normal," while another opthhalmologist, found "a small white ring entirely surrounding the right optic nerve entrance, and partly surrounding the left, which seems to indicate approaching or incipient atrophy of the nerves;" all concurring, however, in regarding the symptoms, noted by them, as "pointing rather to a cerebral than local origin in any change in the eye itself."

This gentleman is a large-framed, tall man, and weighs

about 165 lbs. av., his complexion is florid, pulse is now 108 full, and habitually above the normal condition in force and frequency, the tissues are well nourished and there is no muscular atrophy. He walks unsteadily in the dark and totters some when his eyes are closed. He feels very uncertain about the position of his feet while descending the stairs and in the after part of the day. His muscular power is good. He can force with either hands, the needle of Mathieu's dynamometer round to 80. Says he can not always tell when the bladder or rectum is full, or whether he wants to urinate or defecate. His urine is extruded more feebly and slowly than formerly, and he can not, at times, wholly empty the bladder. Has had shooting pains in the lower limbs, complains of virtiginous sensations, double and obscure vision, luminous appearances and dark spots before the eyes; headache, and noises in the ears. There are no contractures, but slight bi-lateral anæsthesia in the lower limbs.

His case was diagnosed as *Meningitis Verticalis* by several excellent diagnosticians, besides the Army Board. Among those who so diagnosticated the case, in which I also substantially concurred, were two physicians of special reputation for skill in recognizing diseases of the nervous system.

None of the medical gentlemen suggested impending ataxia but myself.

The tendon reflex phenomenon was conspicuously absent in both legs.

This patient is still able to attend to the practice of his profession.

I put the case down, by courtesy, as doubtful, because of the weight of opinion being so largely against me. If it is not one of ataxia, it militates against Westphal's sign.

Case 2.—James Minnix, unmarried, age 33. Native of Canada. By occupation a miner. Was formerly a seaman, sailing from New York to Liverpool. Admitted to City Hospital, July 2nd, 1878.

In Deadwood City, Black Hills country, after prolonged exposure to inclement weather, he sprained his ankle, and at the same time noticed want of sensation in the right leg. Formerly had momentary jerking pains in the knee, which he thought were rheumatic. Had a chancre, which was probably syphilitic, in 1870. He has now a rash on thighs which comes and goes. Takes iodide of potassium.

There is no muscular atrophy. Loss of power in the legs came on gradually. He can not stand or walk in the dark. Sometimes feels like there was nothing under his feet when standing, and cannot tell where his feet are without looking at them.

Has shooting pains from middle lumbar region downward, and a "sort of sea-saw pain," as he calls it, from back to thighs "drawing like a cord." Has had constricting pain around his waist. His urine dribbles away from him frequently. Will go to the water-closet and fail to make water, but on returning the urine will come involuntarily away. This man used to drink a good deal.

His eyes were not examined for atrophy of optic nerve. No marked inequality of pupils. His gait is characteristically ataxic, and he buttons his pants clumsily.

The case is, undoubtedly, one of locomotor ataxia, as it has been pronounced by all the medical men connected with the city hospital who have examined him.

The tendon reflexion can not be elicited.

CASE 3.—Jas. Noonan, a builder, aged 34 years, single. About 20 months ago first noticed that he trembled and became unsteady in his limbs while walking on scaffold work, and was soon obliged to give up his occupation through fear of falling. He gradually became more and more unsteady in his limbs, stepping more and more uncertain, particularly after dark, until obliged to use crutches in order to get around. He has now muscular power in limbs, but lacks the necessary control for guiding his steps. His heels come down first to the ground,

and he loses his balance when eyes are closed, if standing. Says his arms were similarly affected for a short time. Was strong and healthy up to date of the present illness. Had gonorrhœa twelve years ago, which disappeared in three weeks, and for which he took nothing but Epsom salts. No history of syphilis, and has been temperate for the past four years, but formerly very intemperate. He attributes his disease to exposure to cold and dampness while constructing a bridge. No family neurosis. Tendon reflex absent.

Case 4.—Wm. Goff, aged 42, single, laborer, always healthy until lately. Had chills and fever last September, and has not been well since. On the 17th day of January he began to stagger. Has no shooting pains, and the floor feels natural to his feet.

Made several unsuccessful efforts before he could touch the point of his nose when his eyes were shut. He can not stand when eyes are shut, and buttons his pants or picks up a pin clumsily. Eyes not examined with opthalmoscope. Has plantar anæsthesia, and no tendon reflex. Does not complain of impaired vision.

I am inclined to regard this as a case of locomotor ataxia, though by most diagnosticians it would probably be considered otherwise, because of the absence of the lightning pains, of obscurity of vision and the suddenness of its appearance. Tendinous reflexion was absent.

Thus far the clinical testimony has been rather confirmatory than condemnatory of the value of Westphal's sign. We come now to record some cases which can not be doubted, and which, therefore, must materially modify the claims of Westphai as to the certain diagnostic signficance of absent tendon reflex.

Case 5.—T. J. K———, a farmer, aged 59 years, unmarried, large-framed and tall, weighs about 181, has no sexual appetite and no muscular atrophy. Has aphasia, to the extent of speaking with painful slowness, and at times forgetting very familiar words, such as the name of the place of his residence, which he spells out or pronounces

after having them repeated for him. Has had shooting pains in the limbs, and still has darting pains from lumbar region. Was first taken sick about May 1st, 1867, with a dull pain in the region of the heart, followed by a great cough, after riding all day in the rain, he having made a practice of driving from the city to his farm, a distance of ten miles, at midnight, during the preceding summer. Mr. K——— has used tobacco excessively, but is otherwise temperate.

A neuropathic diathesis pervades his family; a brother having died of brain trouble and psychic disturbance; one living brother being ataxic; one sister having painful cerebral and psychic disturbance, with hyperæmia cerebri, which nature has generally relieved by epistaxis; another sister having general and chronic nervous asthenia, including the cerebro spinal axis and the sympathetic. All her vital functions have, for years, been performed sluggishly, while her skin is shriveled and sallow. Her face is small and she is likewise small of stature. The rest of the family—one sister and two brothers—are large-framed and above average height.

The father of our patient died at 60 years of age, after being two years paralyzed; and his grandmother, for twenty years before her death, could never get out of her chair, by reason of some form of paralysis, or rheumatism and paralysis combined—the family say. I could not get the precise particulars concerning the nature of the ancestral affliction from medical sources.

The ataxic symptoms were first manifested in 1867. He then discovered that he could not walk well, especially in the dark, and that he had a tendency to fall—and did sometimes fall forwards when he attempted to wash his face. He can not stand with his eyes shut and feet together, or turn round with the latter apart, without assistance.

He has had the not infrequent experience of ataxics in regard to improvements and relapses, concerning the power of co-ordinating his locomotor movements and

balancing himself, having for a few days during the past two years been able, sometimes, to stand alone with his eyes closed when knowingly placed in very close proximity to a wall, and to turn around without grasping something for support and without falling.

He has always been an early riser, as farmers usually are, but since his affliction he has been in the habit of awaking about 2 A. M. daily, and remaining awake for the remainder of the day, except during an after dinner nap of a quarter or half an hour. His vision is obscure and there is some optic nerve atrophy.

He can not dress himself without assistance. He can not readily find the tip of his nose with the point of a finger of either hand when his eyes are shut, and can not cross his legs without having the ball of the foot or toes supported by my hand. He lifts his foot with a jerk and brings it down in a peculiar manner, and shows a tendency to pitch forward when he walks. He has often fallen down when attempting to go about unassisted. He never ventures out at night, and is seldom able to rise from his chair without putting his hands on his knees, or being assisted by his cane, or the hand of a friend.

He has a good deal of anæsthesia, especially plantar. His sensibility to temperature is somewhat impaired, and his appreciation of weight is partly gone. The ground under his feet when he walks does not now feel so uncertain as formerly.

There is no vesical or rectal paralysis. He is sometimes constipated and has inconstant shooting pains proceeding toward the cervical region. He has had no head symptoms, except an occasional giddiness when constipated. (Since this was written he has had more vertigo and malarial poisoning.)

When I first examined Mr. K———, about one year ago, his pupils were very small—not more than half a line in diameter, in good daylight. I then sent him to an eminent oculist of this city, Dr. John Green, who detected the optic nerve atrophy. The pupils are now a

line and a quarter in diameter in good daylight. Though formerly a fair penman, he has not attempted, since his affliction, to write a letter, but contents himself with slowly forming, in a stilted and unnatural manner, his signature. His expression is anxious and peculiar, but I can not describe it.

Electro-muscular contractility is increased, and the tendinous reflexion is as marked as I ever saw it in a healthy person.

Other physicians have pronounced this a case of locomotor ataxia before me, among them, Dr. C. W. Stevens.

Case 6.—The next case I note is the brother of Mr. K———, who is younger, but, by reason of intemperate habits, looks somewhat older than his brother Thomas, just described.

In this case the ataxia is incipient, and characterized by the peculiar pains in the extremities, plantar anæsthesia and feeble tendinous reflexion on percussion below the knee cap, but no more feeble than I have seen it in several healthy persons, and not so tardy as I have observed it in some of the latter.

Case 7.—H. M. P———, who lives with case 5, and usually accompanies him to my office, to assist him in and out of his carriage, is a married man, aged 39 years, and a brother-in-law of Mr. K———.

He had abdominal dropsy and anasarca in 1856 and 1857, but always got about. He has had no sickness since, except an occasional cough or chill. He is of medium stature and rather slight build. Hair and beard entirely grey. Never had syphilis nor indulged excessively in venery. Has spreed some, but is not an habitual drinker. Has never done much hard labor, but when occupied has been mostly engaged in clerking or selling goods. He makes no complaint of being ill in any way, and I can discern nothing the matter with him.

He has no tendinous reflexion of quadriceps, extensor tendon or tendon patellæ.

Case 8.—H. H. M———, aged 39 years, married. A

medical friend. In every way healthy, and engaged in the active practice of his profession, demonstrator of anatomy in a large medical college, and a diligent and laborious worker. Has no tendon reflex below knee.

Case 9.—Thos. E. Moss, unmarried, aged 23, six weeks ago consulted me from Jefferson county.

About three years ago, last August, he had his skull fractured at the left parieto temporal junction. Was in bed, in consequence, about one and a half weeks. Was never unconscious. Has increased pulse, constant headache and *muscæ volitantes*. Complains of frequently seeing a green spot before his eyes, which gradually widens until he can see nothing else on account of it. He then becomes dizzy and is obliged to lay down. This used to appear every day or so like the ague. Has this illusion now, whenever he has a chill. He is constipated and feels sick at the stomach when this goes off.

Tendinous reflexion below the knee could not be elicited after the repeated trials. Electro muscular contractility in legs, normal.

Case 10.—Joseph Crary came under treatment January 12th. Left pupil, 8; right pupil, 5; eyes otherwise appear normal; atrophy of both optic discs; totally blind; can not perceive when the electric current is passed or interrupted across the optic tract; dull pain encircling the line of the occipito-parietal junction, and settled pain in back and lower part of the cerebellum; he can not lie with the back of his head on a pillow. He first felt uncomfortable feelings in his head last June. Feels like he was walking in the sand of the sea shore, or in the soft snow, sometimes. The carpet feels mushy to him, as though he was sinking down an inch or so. Stands and walks steadily, however, and goes about familiar places unassisted. He never had shooting pains in his limbs; sometimes a pain across his chest. He became totally blind one year ago, while on his way to Hot Springs, Ark. Lost the sight of the left eye in the mines, eight years

ago; the sight failing gradually, beginning with double vision. His right eye failed him quite suddenly, while working in the mines at Deadwood, Black Hills country, after riding in the hot sun all day, about June 28th, last.

He is anæsthetic in arms and legs and tongue. There has been hyperæsthesia cerebri; the slightest sounds, as the noise of boots being blacked, or the playing of a piano, having been quite disagreeable to him. This has now (May 10th) passed away, and he walks everywhere about the city with a friend, without feeling any unusual sensations under him.

Repeated trials have always failed to elicit any tendon reflex below the knee.

From these clinical demonstrations we conclude that, while absent patellar tendon reflex is often of significance as an associated symptom of present locomotor ataxia, and may even serve, when unassociated, to excite suspicion of its approach, we are not justified in regarding it, when it is the only phenomenon observable, as a certain *sign*; or when it is absent and the other symptoms are present, in excluding a diagnosis of posterior sclerosis. It can not have the diagnostic significance claimed for it, when it may be observed in indubitably healthy states of the cord, and when the reverse condition of exaggerated excitability may undoubtedly be found in cases of unquestionable posterior spinal sclerosis.